

## REMARKS

By this Amendment, Applicants cancel claims 99, 102, and 104 without prejudice or disclaimer of the subject matter thereof; add new claims 125-137 to protect additional aspects related to the present invention; and amend claims 83, 92, 100, 101, 103, 109, 112, 114, 115, 121, 123, and 124 to more appropriately define the invention.

Additionally, Applicants amend add a new drawing to more explicitly recite subject matter inherently disclosed in the specification and amend the specification to reference the new drawings. Applicants maintain that the amendments to the specification and new drawing do not add new matter to the subject application. Amendments adding subject matter inherently contained in the specification does not introduce new matter. M.P.E.P. § 2163.07, ed. 8, rev. 1 at 2100-177 to 178 (2003).

Applicants add new Fig. 4E and a corresponding description. Fig. 4E illustrates a plan view of the ESD protection device shown in Figs. 4A and 4B. Fig 4E is modeled after the plan view illustrated in Fig. 2A. All the elements illustrated in Fig. 4E are described at pages 11 and 12 of the specification. Moreover, the original specification recites "Figs. 4A and 4B illustrate an ESD protection device 400 that represents another alternate construction of device 200 [illustrated as a plain view in Fig. 2A]." Thus, Fig. 4E merely illustrates subject matter already inherently disclosed in the specification by reference back to device 200 illustrated in Fig. 2. Hence, Applicants submit that no new matter is introduced by the Amendment. Accordingly, Applicants request that the Examiner approve new Fig. 4E and the corresponding description.

In the Office Action ("OA"), the Examiner disapproved the proposed drawing correction submitted February 25, 2003 as introducing new matter; objected to claim 123; rejected claims 121 and 122 under 35 U.S.C. § 112, first paragraph; rejected claims 83, 87, 88, 92, 96, 101-109,

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112-116, and 122-124<sup>1</sup>, insofar as in compliance with 35 U.S.C. § 112, under 35 U.S.C. § 102(e) as anticipated by Hsu et al., U.S. Patent No. 6,236,073 (“Hsu”); rejected claims 83-88, 92, 96, 99-116, and 121-124, insofar as in compliance with 35 U.S.C. § 112, under 35 U.S.C. § 103(a) as unpatentable over Lin, U.S. Patent No. 5,721,439 (“Lin”); and rejected claims 86, 99, 100, 110, and 111 under 35 U.S.C. § 103(a) as unpatentable over Hsu.

### **I. Response to Disapproval of Drawings**

The Examiner alleged that the proposed drawing correction filed on February 25, 2003 introduces new matter. (OA at ¶ 1.) Applicants do not agree with the Examiner’s allegation, but, in order to advance prosecution, withdraw the proposed drawing correction filed on February 25, 2003.

### **II. Response to Objections**

The Examiner alleged that the claim recitation “the channel region” at line 10 of claim 123 lacks antecedent basis. (OA at ¶ 2.) Applicants amend claim 123 at line 7 to read “a channel region.” This amendment provides antecedent basis for the term “the channel region” at line 10 of claim 123. Accordingly, Applicants request that the Examiner withdraw the objection to claim 123.

### **III. Response to Rejection Under 35 U.S.C. § 112, First Paragraph**

The Examiner contended that claims 121 and 122 contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that Applicants, at the time the invention was filed, had possession of the claimed invention.

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<sup>1</sup> In the statement of rejection, the Examiner indicated that claims 123 and 124 are rejected as anticipated by Hsu. However, in the text of this rejection, the Examiner refers to Lin, Fig. 8 when addressing claims 123 and 124. It is clear that the Examiner did intend for the rejection to cite Lin, Fig. 8 since Hsu does not include a Fig. 8. Thus, Applicants are unclear as to the ground of rejection for claims 123 and 124 with respect to Hsu and request that the Examiner clarify this rejection. Nonetheless, Applicants will address claims 123 and 124 with respect to Hsu.

Furthermore, the Examiner rejected claims 123 and 124 under section 103(a) over Lin. Thus, Applicants will address claims 123 and 124 with respect to Lin when responding to this rejection.

Specifically, the Examiner alleged that the recitation, “each of the segments formed within the first diffusion region being closer to the channel than to the contact region, as recited in claim 121,” is not supported by the specification. (OA at ¶ 4.)

Applicants do not agree with the Examiner’s allegation, but, in order to advance prosecution, amend claim 121 to read “a center of the current divider segments formed within the first diffusion region being closer to the channel than to the contact region” (emphasis added). Applicants submit that support for the amendment may be found, for example, on page 27 of the specification. More particularly, the specification beginning at page 27, line 12 recites “[t]he benefits of the pseudo-collector structure can be further enhanced by positioning the current divider segments such that the weight or area center of all segments in the drain region is closer to the gate or channel region than to the drain contacts” (emphasis added). Thus, no new matter is introduced by this amendment. Accordingly, Applicants request that the Examiner withdraw the rejection of claims 121 and 122 under section 112, first paragraph.

#### **IV. Response to Rejection Under 35 U.S.C. § 102(b)**

The Examiner alleged that claims 83, 87, 88, 92, 96, 101-109, 112-116, and 122-124 are anticipated by Hsu. Applicants cancel claims 102 and 104 and, therefore, the rejection of these claims is rendered moot. With regard to the remaining rejections, Applicants respectfully submit that Hsu fails to anticipate these claims because Hsu fails to teach, expressly or inherently, all the claim elements.

In order to properly anticipate Applicants’ claimed invention under 35 U.S.C. § 102(e), each and every element of the claim in issue must be found, either expressly described or under principles of inherency, in a single prior art reference. Furthermore, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” M.P.E.P. § 2131 (quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir.

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1989)). Finally, “[t]he elements must be arranged as required by the claim.” M.P.E.P. § 2131 at p. 2100-69.

Claim 83 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a plurality of current divider segments randomly distributed within [a] first diffusion region, wherein said segments include first and second segments formed of different constructions.” Claim 92 is directed to an electrostatic discharge protection device including similar recitations.

Hsu is directed to an electrostatic discharge device. Hsu discloses that the discharge device comprises a plurality of floating polysilicons 140 positioned between a gate electrode 126 and drain contacts 130. *See* Hsu, col. 3, lines 15-56. Hsu discloses that floating polysilicons 140 are staggered in a checkered pattern. *See* Hsu, col. 2, lines 21-41 and Fig. 5. However, Hsu fails to disclose that some of the polysilicons are formed of different constructions. In fact, Hsu discloses that all floating polysilicons 140 are formed of an identical construction. *See* Hsu, Fig. 5.

Thus, Hsu fails to teach at least that “said segments include first and second segments formed of different constructions,” as recited in claim 83. Accordingly, Hsu fails to anticipate claim 83. For at least this reason, claim 83 is allowable.

Claims 87, 88, 105-109, and 112-116 are allowable at least due to their dependence from allowable claim 83.

Claim 101 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a plurality of current divider segments formed within and completely surrounded by [a] first diffusion region, wherein said segments include a first segment adjacent to a second segment and spaced apart from the second segment by a first

gap in a first direction; said segments further include a third segment adjacent to a second segment and spaced apart from the second segment by a second gap in the first direction; and said first gap being larger than the second gap” (emphasis added).

Claim 103 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a plurality of current divider segments formed within and completely surrounded by [a] first diffusion region, wherein said segments include a first segment having a first center-of-area, adjacent to a second segment having a second center-of-area, and being spaced apart from the second segment; a third segment having a third center-of-area, adjacent to the second segment, and being spaced apart from the second segment; a first distance in a first direction between the first and second centers-of-area; a second distance in the first direction between the third and second centers-of-area; and the first distance being larger than the second distance” (emphasis added).

As mentioned above, Hsu discloses that floating polysilicons 140 are staggered in a checkered pattern. In fact, Hsu illustrates that adjacent floating polysilicons 140 in any direction are the same distance apart. Thus, Hsu fails to teach or suggest that adjacent segments are separated by different distances.

Therefore, Hsu fails to teach all the elements of claims 101 and 103. Accordingly, Hsu fails to anticipate claims 101 and 103. For at least this reason, claims 101 and 103 are allowable.

Claim 96 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a plurality of current divider segments formed within and completely surrounded by [a] first diffusion region including first and second segments formed in at least one of different shapes, different sizes, and different orientations with respect to each other” (emphasis added).

As mentioned above, Hsu discloses that all floating polysilicons 140 are formed of an identical construction (i.e., shape and size). *See* Hsu, Fig. 5. Hsu illustrates that adjacent floating polysilicons 140 in any direction are the same distance apart and aligned with the same orientation. Thus, Hsu fails to teach at least first and second segments formed in at least one of different shapes, different sizes, and different orientations with respect to each other” (emphasis added).

Therefore, Hsu fails to teach all the elements of claim 96. Accordingly, Hsu fails to anticipate claim 96. For at least this reason, claim 96 is allowable.

Claim 121 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a plurality of current divider segments formed within [a] first diffusion region between [a] contact region and the channel and a center of the current divider segments formed within the first diffusion region being closer to the channel than to the contact region.”

As mentioned above, Hsu discloses that the discharge device comprises a plurality of floating polysilicons 140 positioned between a gate electrode 126 and drain contacts 130. *See* Hsu, col. 3, lines 15-56. However, Hsu discloses that floating polysilicons 140 are arranged at different distances from gate electrode 126 with some of the polysilicon elements positioned closer to drain contacts 130. *See* Hsu, Fig. 5.

Therefore, Hsu fails to teach all the elements of claim 121. Accordingly, Hsu fails to anticipate claim 121. For at least this reason, claim 121 is allowable. Claim 122 is allowable at least due to its dependence from allowable claim 121.

Claim 123 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a first current divider segment formed within the

first diffusion region having a first portion, a longitudinal axis of the first portion being oriented at an angle neither parallel nor perpendicular to a longitudinal direction of the channel region.”

As mentioned above, Hsu discloses that floating polysilicons 140 are staggered in a checkered pattern. Hsu further discloses that floating polysilicons 140 are formed of an identical construction, (i.e. shape and size). *See* Hsu, Fig. 5. Furthermore, all floating polysilicons 140 are arranged such that their longitudinal axis is parallel to the channel.

Therefore, Hsu fails to teach all the elements of claim 123. Accordingly, Hsu fails to anticipate claim 123. For at least this reason, claim 123 is allowable. Claim 124 is allowable at least due to its dependence from allowable claim 123.

**V. Response to Rejections under 35 U.S.C. § 103(a) over Lin**

The Examiner alleged that claims 83-88, 92, 96, 99-116, and 121-124 are unpatentable over Lin. Applicants cancel claims 99, 102, and 104 and, therefore, the rejection of these claims is rendered moot. With regard to the remaining rejections, Applicants submit that a *prima facie* case of obviousness has not been established for these claims because Lin fails to teach or suggest all the claim elements.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Furthermore, “[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art.” M.P.E.P. § 2143.01 (quoting *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970)). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. M.P.E.P. § 2143 at pp. 2100-122 to 127.

Claim 83 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a plurality of current divider segments randomly distributed within [a] first diffusion region, wherein said segments include first and second segments formed of different constructions.” Claim 92 is directed an electrostatic discharge protection device including similar recitations.

Lin is directed to electrostatic discharge circuitry. Lin discloses that the discharge circuitry comprises a number of isolated islands 81-86 arranged in a diffusion region. *See* Lin, Fig. 8. However, Lin discloses that the isolated islands are formed of the same construction. Specifically, Lin teaches “islands [81-86] are aligned along the longitudinal direction of the islands themselves, and each isolated island in a row is in relative interleaving relationship with the proximate islands in the neighboring rows at both sides.” Lin, col. 5, lines 52-56. Furthermore, Lin teaches that “all the islands 81-86 are substantially the same size in terms of both width and length ... [which] allows for a symmetric alignment.” Lin, col. 5, lines 61-64 (emphasis added).

Thus, Lin fails to teach at least that “said segments include first and second segments formed of different constructions,” as recited in claim 83 and 92. Accordingly, a *prima facie* case of obviousness has not been established for these claims because Lin fails to teach or suggest all the claim elements. For at least this reason, claims 83 and 92 are allowable.

Claims 86-88, 100, and 105-116 are allowable at least due to their dependence from allowable claim 83.

Claim 101 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a plurality of current divider segments formed within and completely surrounded by [a] first diffusion region, wherein said segments include a



first segment adjacent to a second segment and spaced apart from the second segment by a first gap in a first direction; said segments further include a third segment adjacent to a second segment and spaced apart from the second segment by a second gap in the first direction; and said first gap being larger than the second gap” (emphasis added).

Claim 103 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a plurality of current divider segments formed within and completely surrounded by [a] first diffusion region, wherein said segments include a first segment having a first center-of-area, adjacent to a second segment having a second center-of-area, and being spaced apart from the second segment; a third segment having a third center-of-area, adjacent to the second segment, and being spaced apart from the second segment; a first distance in a first direction between the first and second centers-of-area; a second distance in the first direction between the third and second centers-of-area; and the first distance being larger than the second distance” (emphasis added).

As mentioned above, Lin teaches “islands [81-86] are aligned along the longitudinal direction of the islands themselves, and each isolated island in a row is in relative interleaving relationship with the proximate islands in the neighboring rows at both sides.” Lin, col. 5, lines 52-56. Furthermore, Lin teaches that “all the islands 81-86 are substantially the same size in terms of both width and length ... [which] allows for a symmetric alignment.” Lin, col. 5, lines 61-64 (emphasis added).. Thus, Lin fails to teach or suggest that adjacent segments are separated by different distances in a first direction.

Therefore, Lin fails to teach all the elements of claims 101 and 103. Accordingly, a *prima facie* case of obviousness has not been established for these claims because Lin fails to

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teach or suggest all the claim elements. For at least this reason, claims 101 and 103 are allowable.

Claim 96 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a plurality of current divider segments formed within and completely surrounded by [a] first diffusion region including first and second segments formed in at least one of different shapes, different sizes, and different orientations with respect to each other” (emphasis added).

As mentioned above, Lin teaches that “all the islands 81-86 are substantially the same size in terms of both width and length ... [which] allows for a symmetric alignment.” Lin, col. 5, lines 61-64 (emphasis added). Therefore, Lin fails to teach all the elements of claim 96. Accordingly, a *prima facie* case of obviousness has not been established for this claim because Lin fails to teach or suggest all the claim elements. For at least this reason, claim 96 is allowable.

Claims 84 and 85 are allowable at least due to their dependence from allowable claim 96.

Claim 121 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a plurality of current divider segments formed within [a] first diffusion region between [a] contact region and the channel and a center of the current divider segments formed within the first diffusion region being closer to the channel than to the contact region.”

As mentioned above, Lin discloses that isolated islands 81-86 are arranged at different distances from the gate electrode with some of isolated islands 81-86 positioned closer to the drain contacts. *See* Lin, Figs. 8 and 9.

Therefore, Lin fails to teach or suggest all the elements of claim 121. Accordingly, a *prima facie* case of obviousness has not been established for this claim because Lin fails to teach or suggest all the claim elements. For at least this reason, claim 121 is allowable. Claim 122 is allowable at least due to its dependence from allowable claim 121.

Claim 123 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a first current divider segment formed within the first diffusion region having a first portion, a longitudinal axis of the first portion being oriented at an angle neither parallel nor perpendicular to a longitudinal direction of the channel region.”

As mentioned above, Lin teaches that “all the islands 81-86 are substantially the same size in terms of both width and length ... [which] allows for a symmetric alignment.” Lin, col. 5, lines 61-64. Furthermore, isolated islands 81-86 are arranged such that their longitudinal axis is parallel to the channel. *See* Lin, Figs. 8 and 9.

Therefore, Lin fails to teach or suggest all the elements of claim 123. Accordingly, a *prima facie* case of obviousness has not been established for this claim because Lin fails to teach or suggest all the claim elements. For at least this reason, claim 123 is allowable. Claim 124 is allowable at least due to its dependence from allowable claim 123.

#### **VI. Response to Rejections under 35 U.S.C. § 103(a) over Hsu**

The Examiner alleged that claims 86, 99, 100, 110, and 111 are unpatentable over Hsu. Applicants cancel claim 99 and, thus, the rejection of this claim is rendered moot. With regard to the remaining claims, Applicants submit that a *prima facie* case of obviousness has not been established for these claims because Hsu fails to teach or suggest all the claim elements.

Claims 86, 100, 110, and 111 depend either directly or indirectly from claim 83, and, therefore, incorporate the elements of that claim. As mentioned above, Hsu fails to teach or suggest at least that “said segments include first and second segments formed of different

constructions,” as incorporated in claims 86, 100, 110, and 111. Accordingly, a *prima facie* case of obviousness has not been established for these claims because Hsu fails to teach or suggest all the claim elements. For at least this reason, claims 86, 100, 110, and 111 are allowable.

## **VII. New Claims**

Applicants add new claims 125-137 to protect additional aspect related to the present invention. Claims 125-137 depend, directly or indirectly, from either independent claims 83, 92, 96, 101, 103, 121, or 123. Applicants submit that claims 125-137 are fully supported by the originally-filed specification. For example, support for claims 125-127 may be found at page 24 of the specification. Further, for example, support for claims 128-135 may be found in Figs. 4A, 4B, 4C, and 4D. Also, for example, support for claims 136 and 137 may be found in Fig. 24 and at page 24 of the specification.

Furthermore, as mentioned above, claims 83, 92, 96, 101, 103, 121, and 123 are allowable over the cited prior art of record. Accordingly, new claims 125-137 are allowable at least due to their dependence from allowable claims 83, 92, 96, 101, 103, 121, and 123.

## **VIII. Conclusion**

In view of the foregoing, Applicants respectfully request that the Examiner withdraw the objections and rejections of the Office Action and timely allow the subject application.

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Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: December 11, 2003

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